

**Study Guide**

For use with pages 125–129

**GOAL** Solve equations using the distributive property.**EXAMPLE 1** Writing and Solving an Equation

You are giving a birthday party. For the party, you want to buy a personalized birthday banner that costs \$17, foil balloons that cost \$1.90 each, and packs of streamers that cost \$1.10 each. You have a total budget of \$35. If you buy equal numbers of foil balloons and packs of streamers, how many can you afford to buy?

**Solution**

Let  $n$  represent the number of foil balloons and the number of packs of streamers. Then  $1.90n$  represents the cost of  $n$  balloons, and  $1.10n$  represents the cost of  $n$  packs of streamers. Write a verbal model.

Cost of foil balloons	+	Cost of packs of streamers	+	Cost of banner	=	Total budget
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$$1.90n + 1.10n + 17 = 35$$

Substitute.

$$3n + 17 = 35$$

Combine like terms.

$$3n + 17 - 17 = 35 - 17$$

Subtract 17 from each side.

$$3n = 18$$

Simplify.

$$\frac{3n}{3} = \frac{18}{3}$$

Divide each side by 3.

$$n = 6$$

Simplify.

**Answer:** You can afford to buy 6 foil balloons and 6 packs of streamers.

**Exercise for Example 1**

1. You have \$15.50 to spend on party food. Gum drops are \$3 per pound, yogurt-covered peanuts are \$2.50 per pound, and cashews are \$4.50 per pound. If you buy 0.5 pound of gum drops and an equal weight of yogurt-covered peanuts and cashews, how much can you afford to buy?

**EXAMPLE 2** Solving Equations Using the Distributive Property

Solve  $-8(5 - 7c) = 184$ .

$$-8(5 - 7c) = 184$$

Write original equation.

$$-40 + 56c = 184$$

Distributive property

$$-40 + 56c + 40 = 184 + 40$$

Add 40 to each side.

$$56c = 224$$

Simplify.

$$\frac{56c}{56} = \frac{224}{56}$$

Divide each side by 56.

$$c = 4$$

Simplify.

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**Exercises for Example 2**

Solve the equation. Check your solution.

2.  $-2(7 - 11v) = 96$

3.  $12(4 - 3g) = -132$

4.  $-5(c - 1) = -50$

**EXAMPLE 3****Combining Like Terms After Distributing**Solve  $13x - (x + 7) = 29$ .

$13x - (x + 7) = 29$

Write original equation.

$13x - x - 7 = 29$

Distributive property

$12x - 7 = 29$

Combine like terms.

$12x - 7 + 7 = 29 + 7$

Add 7 to each side.

$12x = 36$

Simplify.

$\frac{12x}{12} = \frac{36}{12}$

Divide each side by 12.

$x = 3$

Simplify.

**Exercises for Example 3**

Solve the equation. Check your solution.

5.  $10a + 5(2a + 1) = 65$

6.  $18b + 8(3b + 7) = 98$

7.  $11z - 3(z - 9) = 123$